



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

OIL CONSERVATION DIVISION
BOX 2088
SANTA FE, NEW MEXICO 87501

DATE 2-1-84

RE: Proposed MC _____
Proposed DHC ✓ _____
Proposed NSL _____
Proposed SWD _____
Proposed WFX _____
Proposed PMX _____

Gentlemen:

I have examined the application dated 2-1-84
for the Onore C.C. McArthur B#1 J-28-27N-10W
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve

Yours truly,

Ernest A. Day

—

—

—



Amoco Production Company

Petroleum Center Building
501 Airport Drive
Farmington, New Mexico 87401
505-325-8841

S. D. Blossom
District Superintendent

January 26, 1984

New Mexico Oil Conservation Division ✓
1000 Rio Brazo Road
Aztec, NM 87410

New Mexico Oil Conservation Division
Box 2088
Santa Fe, NM 87501

File: DHS-38-986.510

C. A. McAdams "B" No. 1
1850' FSL x 1650' FEL, Section 28, T27N, R10W
San Juan County, New Mexico
Commingling Application

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Amoco Production Company requests approval to downhole commingle production from the Angels Peak Gallup and Basin Dakota pools in the subject well. The commingling will utilize a production packer set between the two zones at 6287' and a sliding sleeve at 6256' to produce up the 2-3/8" tubing (see Attachment No. 1).

The commingling of the Gallup and Dakota pools is necessary to produce the remaining recoverable oil and gas reserves from the Gallup formation in the subject well. The Gallup was produced from November 1959 through August 1967 before reaching its economic limit. High operating costs due to numerous rod related problems made continued operations uneconomical. The zone was temporarily abandoned in January 1968 pending higher oil prices. Working-over and producing the zone as a stand-up Gallup is not economically feasible due to the low recoverable reserves and high operating costs. Since the Gallup cannot flow and does not have sufficient pressure to cycle a plunger, the only way to recover the Gallup reserves is to produce the Gallup using the Dakota pressure. The proposed commingling will not adversely affect either zone for the following reasons:

1. Neither zone will be damaged by water production from the other zone. The Dakota averages 1 BWPM and the offsetting Gallup wells average 1 BWPM.
2. Neither zone has a history of liquid hydrocarbon sensitivity and should not be damaged by either zone's production.

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Page 2
January 26, 1984
File: DHS-38-986.510

3. Several offsets have had good success in downhole commingling Gallup and Dakota production. The most recent commingles are Amoco Production Company's Jack Frost B No. 1E, Order No. MC-2913, one-half mile to the southeast, and Dugan Production Company's McAdams No. 3, Order No. R-5313, one mile to the southeast.
4. Both zones produce gas of a similar composition and heating value, so there will be no loss of value due to the commingling.
5. Both zones have common ownership, so there will be no problem with allocating royalty or working interest payments.
6. The bottom hole pressure of the Gallup is 52.3 percent of the Dakota bottom hole pressure.

In compliance with NMOC Rule 303C, we have attached two copies of the following:

1. Name and address of the operator.
2. Lease name, well number, well location, and names of pools to be commingled.
3. A plat showing acreage dedications and ownership of offsetting leases (Attachments 2, 3, and 4).
4. A current Dakota productivity test (Attachment 5). A Gallup test is not available since the well has been shut-in since January 1968. We request that an exception be granted to the 30 day test requirement since the well has not produced for 16 years. We have a Dakota deliverability test scheduled for February 16, 1984, to meet the 30 day requirement for the Dakota formation.
5. Production decline curves for both formations (Attachments 6 and 7).
6. Estimated bottom hole pressure data (Attachment 8).
7. A description of fluid characteristics for each zone to show fluid compatibility (Attachments 9 and 10). Oil gravities are different, but oil prices are the same. Neither zone produces more than 1 BW per month.
8. Gas analysis showing that the value of commingled production will not be less than any one of the individual streams (Attachments 11 and 12). A gas analysis for the Gallup in the subject well is not available. We have attached a copy of a Gallup analysis from the offsetting Jack Frost "B" No. 1E.



9. A formula for allocating production to each of the commingled zones (Attachment 13).
10. A statement that all offset operators have been notified in writing of the proposed commingling (Attachment 14).

To allocate production to the individual Dakota and Gallup horizons, we recommend the following:

1. Allocate 59.8 percent of the gas production to the Dakota formation and 92.8 percent of the oil production to the Gallup formation.
2. After 30 days, we will conduct a commingled deliverability test and submit a Form C-116. Allocation for the two formations will be according to the difference between commingled deliverability and the Dakota deliverability test scheduled to start on February 16, 1984.

We would appreciate prompt handling of this matter so we can initiate Gallup production before potential summer sales restrictions.

Very truly yours,



TDC/tk
Attachments

AM6

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1850' FSL X 1650' FEL SEC. 28 T27N R10W
SAN JUAN COUNTY, NEW MEXICO

GL 6109'

9 5/8" CSA 495' (32.3#)
X 350 SX CMT

ANGEL PEAK GALLUP PERFS:
5438'-5458' 5538'-5558'
5613'-5657' 5704'-5738'
5704'-5738'

BASIN DAKOTA PERFS:
6362'-6402' 6419'-6459'

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SLIDING SLEEVE AT 6256'
PACKER AT 6287'

2 3/8" TSA 6357'

7" CSA 6601' (20#)
X 700 SX CMT

PBD 6554'
TD 6602'

Amoco Production Company

C. A. MCADAMS B NO. 1

SCALE:

ORG.
NO.



NEW MEXICO OIL CONSERVATION COMMISSION
Well Location and Acreage Dedication Plat

Section A.

Attachment No. 3

Date October 23, 1959

Operator PAN AMERICAN PETROLEUM CORPORATION Lease C. A. ROADAMS "B"
Well No. 1 Unit Letter J Section 23 Township 27 North Range 10 East N.M.P.M.
Located 1850 Feet From South Line, 1650 Feet From East Line
County San Juan G. L. Elevation 6100 Dedicated Acreage 60 Acres
Name of Producing Formation Callup Pool Angels Peak Callup

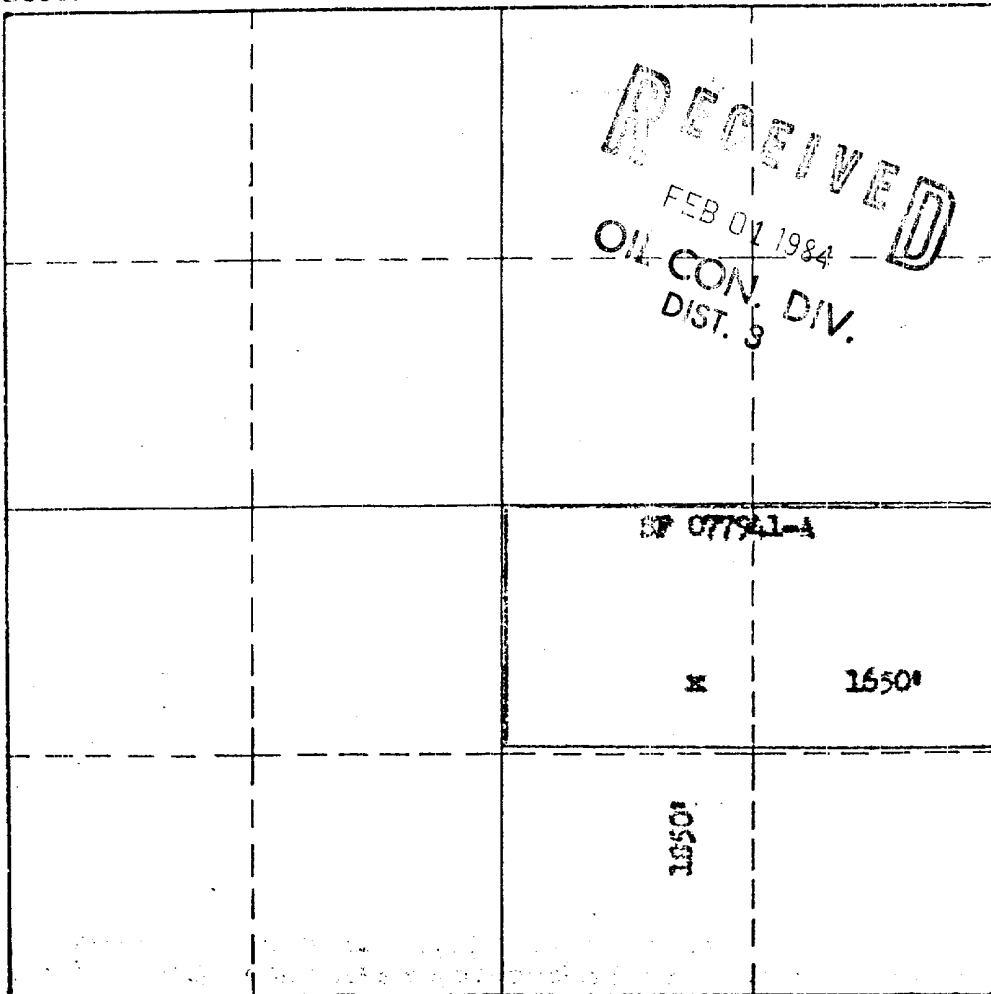
1. Is the Operator the only owner* in the dedicated acreage outlined on the plat below?
Yes _____ No X
2. If the answer to question one is "no," have the interests of all the owners been consolidated by communitization agreement or otherwise? Yes X No _____. If answer is "yes," Type of Consolidation Joint acreage holdings
3. If the answer to question two is "no," list all the owners and their respective interests below:

Owner

Land Description

Note: Form C-128 filed to show revised acreage dedication for Callup zone in accordance with spacing provisions for the Angels Peak Callup Field.

Section B



This is to certify that the information in Section A above is true and complete to the best of my knowledge and belief.

PAN AMERICAN PETROLEUM CORPORATION

(Operator) ORIGINAL SIGNED

R. M. Bauer, Jr. R. M. Bauer, Jr.

(Representative)

Box 487, Farmington, New Mexico

Address

This is to certify that the well location shown on the plat in Section B was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed Aug. 15, 1958

Original /s/ James F. Leone

Registered Professional Engineer and/or Land Surveyor

Certificate No. 1463

(See instructions for completing this form on the reverse side)



NEW MEXICO OIL CONSERVATION COMMISSION

Well Location and Acreage Dedication Plat

Section A.

Attachment No. 2

Date October 24, 1959

Operator PAN AMERICAN PETROLEUM CORPORATION Lease O. A. McADAMS "B"
Well No. 1 Unit Letter J Section 33 Township 27 North Range 10 East NMPN
Located 1350 Feet From South Line, 1650 Feet From East Line
County San Juan G. L. Elevation 6100 Dedicated Acreage 320 Acres
Name of Producing Formation Dakota Pool Angels Peak Dakota

1. Is the Operator the only owner* in the dedicated acreage outlined on the plat below?
Yes _____ No X
2. If the answer to question one is "no," have the interests of all the owners been consolidated by communitization agreement or otherwise? Yes X No _____. If answer is "yes," Type of Consolidation Joint acreage holdings
3. If the answer to question two is "no," list all the owners and their respective interests below:

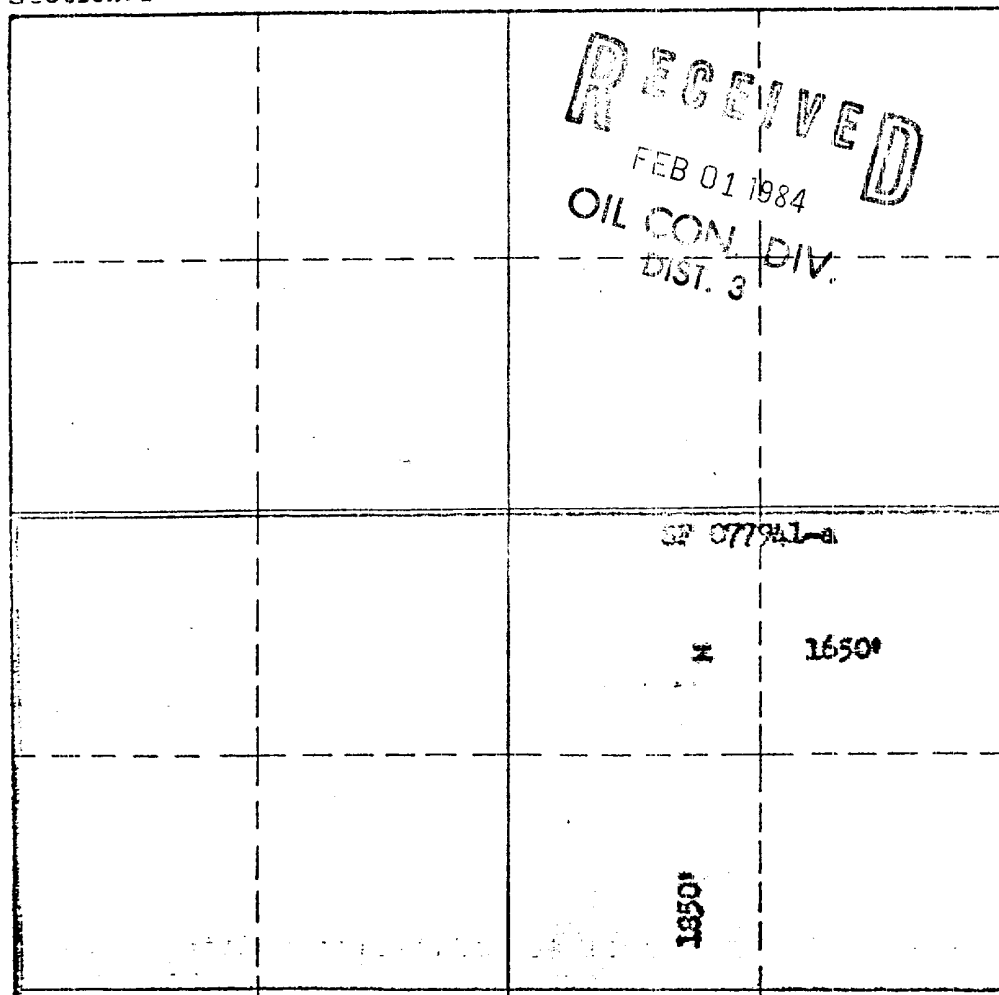
Owner _____

Land Description _____

Note: Form C-128 filed to show revised acreage dedication for Dakota zone in

accordance with the provisions of Order No. R-1267 dated November 21, 1958.

Section B



This is to certify that the information in Section A above is true and complete to the best of my knowledge and belief.

PAN AMERICAN PETROLEUM CORPORATION

(Operator)

ORIGINAL SIGNATURE
R. M. Bauer, Jr. R. M. Bauer, Jr.

(Representative)

Box 437, Farmington, New Mexico

Address

This is to certify that the well location shown on the plat in Section B was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed AUG. 15, 1958

Original
/s/ James P. Loebe

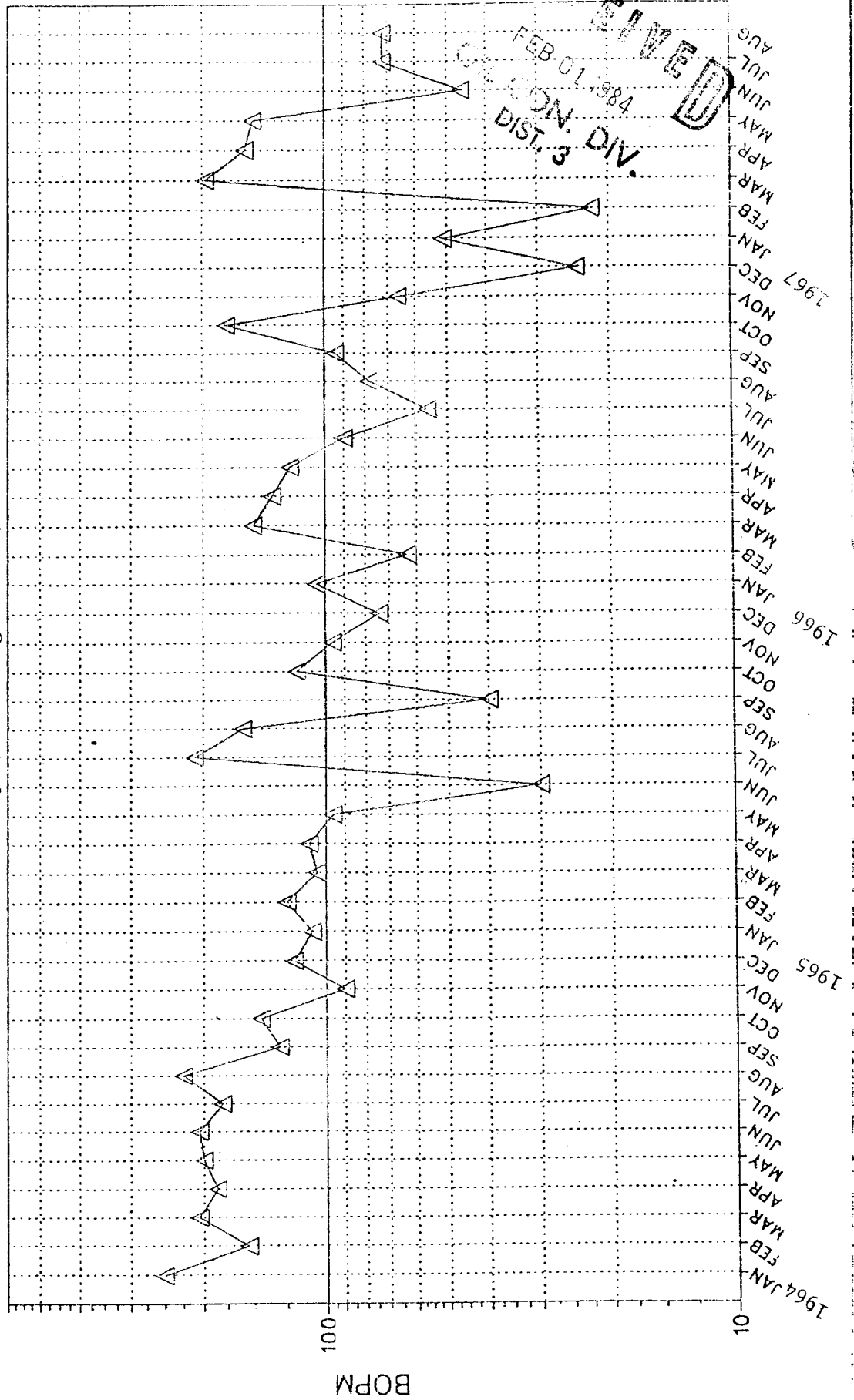
Registered Professional
Engineer and/or Land Surveyor

Certificate No. 1463



C.A.MCADAMS B NO.1

Latest Gallup Oil Production
(No recorded gas rates)



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C. A. MCADAMS B #1

RIOW

20	C.A. McAdams D #2 C.A. McAdams D #1 Amoco	E.J. Johnson C #1 E Johnson G.C. B #1 Johnson G.C. Dale E.J. Johnson C #1 Amoco	J.C. Gordon D #2 J.C. Gordon D #1 E J.C. Gordon D #1 J.C. Gordon D #2 E Amoco	22
29	EPUG Huerfano #217 EPUG Huerfano #105	C.A. McAdams B #2 C.A. McAdams B #1 Amoco	Jack Frost B #2 Jack Frost B #2 E Jack Frost B #1 Amoco	27
32	EPUG Huerfano #228 EPUG Huerfano #227	EPUG Huerfano #113 EPUG Huerfano #106	Dugan McAdams #1 Dugan McAdams #3 Dugan McAdams #4 Dugan McAdams #2	34

■ BASIN DAKOTA WELLS

○ ANGEL PEAK GALLUP WELLS

■

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C.A. McAdams "B" No. 1

BHP Data

Dakota

Amerada Bomb

Extension = 0.595

Pressure = 904 psig

Gallup

Amerada Bomb

Extension = 0.313

Pressure = 473 psig

Ratio Gallup to Dakota BHP = $\frac{473}{904} = 52.3\%$

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Attach No. 9

11 SEC 20

CRUDE OIL RUN TICKET LEDGER - AMOCO PRODUCTION COMPANY (USA)

07/09/83 PAGE
01:43
RTE
GROUP OUTPUT

OIL
VALUE (8)

PRICE/ BBL.
PRICE CODE
TRUE GTY
CORRECTED BBL (2)
UNCORRECTED BBL (1)
TANK NUMBER
PROD. DATE
TICKET NUMBER
C
FLAC SF D

JICARILLA GAS COM #035-C (CONTINUED)
290526 00 3

5,994.30 (23 VAL-T,C)
290526 02 9 018301 06/09 000813
290526 02 9

JICARILLA GAS COM #035-C
290526 02 9 018301 06/09 000813
290526 02 9

5,994.30 (23 VAL-T,C)
290526 02 9 018301 06/09 000813
290526 02 9

MARCOTTE GAS COM

290544 00 6 013558 06/17 000710
290544 00 6 005921 06/18 000426
290544 00 6 005922 06/18 000425
290544 00 6

12,255.29 (23 VAL-T,C)
290544 01 4 005921 06/18 000426
290544 01 4 005922 06/18 000425
290544 01 4

MARCOTTE GAS COM

290544 01 4 005921 06/18 000426
290544 01 4 005922 06/18 000425
290544 01 4

6,016.50 (23 VAL-T,C)
290544 02 2 013558 06/17 000710
290544 02 2

MARCOTTE GAS COM

290544 02 2 013558 06/17 000710
290544 02 2

6,238.79 (23 VAL-T,C)
290574 01 1 031560 06/01 000293
290574 01 1

MCADAMS, C.A. /B/ #2 Dakota
290574 01 1 031560 06/01 000293
290574 01 1

5,951.08 (23 VAL-T,C)
290574 03 7 031560 06/01 000293
290574 03 7

C A MCADAMS /B/ WELL #1
290574 03 7 031560 06/01 000293
290574 03 7

5,951.08 (23 VAL-T,C)
290574 03 7 031560 06/01 000293
290574 03 7

MCADAMS, C.A. /C/
290575 00 0 031700 06/07 000440
290575 00 0

5,951.08 (23 VAL-T,C)
290575 00 0 031700 06/07 000440
290575 00 0

5,951.08 (23 VAL-T,C)
290575 00 0 031700 06/07 000440
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290575 00 0

5,951.08 (23 VAL-T,C)
290575 00 0 031700 06/07 000440
290575 00 0

5,951.08 (23 VAL-T,C)
290575 00 0 031700 06/07 000440
290575 00 0

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OIL CON. DIV.
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Attachment No. 11

04/17/82

EL PASO NATURAL GAS COMPANY
MEASUREMENT DEPARTMENT
POST OFFICE BOX 1492
EL PASO, TEXAS 79999

CHROMATOGRAPHIC GAS ANALYSIS REPORTS

AMCO PRODUCTION CO.
ATTN: R. A. CONNER
501 AIRPORT DRIVE
FARMINGTON, N. M. 87401

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ANAL DATE 04 08 82

METER STATION NAME
C A MC ADAMS B #2

METER STA 73751
OPER 0203

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOD.	SCALE	H2S GRAINS	LOCATION
00	04 07 82	04 13 82	06	1		4 F 03

	NORMAL MOL%	GPM
C O 2	1.05	.000
H 2 S	.00	.000
N2	.84	.000
METHANE	79.42	.000
ETHANE	10.96	2.930
PROPANE	4.96	1.364
ISO-BUTANE	.64	.209
NORM-BUTANE	1.23	.388
ISO-PENTANE	.31	.113
NORM-PENTANE	.28	.101
HEXANE PLUS	.31	.135

TOTALS

100.00

5.240

SPECIFIC GRAVITY

.718

MIXTURE HEATING VALUE
(BTU/CF AT 14.73 PSIA, 60 DEGREES, DRY) 1,227 ✓

RATIO OF SPECIFIC HEATS

1.281



CHEMICAL & GEOLOGICAL LABORATORIES

P.O. Box 2794
Casper, Wyoming 82602

GAS ANALYSIS REPORT

Company AMOCO Production Co. Date 5-4-82 Lab. No. 40525-1
 Well No. Jack Frost Gas Com. B-1E Location M 27-27N-10W
 Field Angel Peak Gallup Formation Gallup
 County San Juan Depth _____
 State New Mexico Sampling point _____
 Line pressure 480 psig; Sample pressure 470 psig; Temperature _____ ° F; Container number RC1167
 Remarks Flowing pressure _____ 480 psig
(4-26-82)

Component	Mole % or Volume %	
Oxygen.....	0	
Nitrogen.....	1.71	
Carbon dioxide.....	0.54	
Hydrogen sulfide.....	Nil	
Methane.....	79.90	
Ethane.....	10.28	
Propane.....	5.22	
Iso-butane.....	0.48	
N-butane.....	1.36	
Iso-pentane.....	0.23	
N-pentane.....	0.22	
Hexanes & higher.....	0.06	
Total.....	100.00	2.209

Gallons
per MCF

GPM of pentanes & higher fraction..... 0.192
 Gross btu/cu. ft. @ 60° F. & 14.7 psia (dry basis)..... 1203
 Specific gravity (calculated from analysis)..... 0.704
 Specific gravity (measured)..... 0.705

Remarks: _____

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MAY 13 1982
FARMINGTON
DIST. 3

Wen

60: 100
100: 100

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Allocation Formula For Gallup and Dakota Production

C.A. McAdams "B" No. 1

Gas Production

10/82 to 9/83 (Inclusive) Dakota averaged 111 MCFD
Gallup estimated to be 75 MCFD (based upon average
offset Gallup production)

Percent of total gas production to Dakota = $\frac{\text{Dakota}}{\text{Gallup} + \text{Dakota}}$

$$\% = \frac{111}{111 + 75} = 59.7\%$$

Oil Production

10/82 to 9/83 (Inclusive) Dakota averaged 5.4 BOPM
9/66 to 8/67 (Inclusive - last production) Gallup averaged 93.8 BOPM

Percent of total oil production to Gallup = $\frac{\text{Gallup}}{\text{Gallup} + \text{Dakota}}$

$$\% = \frac{93.8}{93.8 + 5.4} = 94.5\%$$

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Amoco Production Company

Petroleum Center Building
501 Airport Drive
Farmington, New Mexico 87401
505-325-8841

S. D. Blossom
District Superintendent

January 26, 1984

Dugan Production Company
P. O. Box 208
Farmington, NM 87499

El Paso Natural Gas Company
P. O. Box 990
Farmington, NM 87499

File: DHS-23-400.1

C. A. McAdams B No. 1
1850' FSL x 1650' FEL, Section 28, T27N, R10W
San Juan County, New Mexico
Proposed Downhole Commingling

Amoco Production Company is requesting approval from the New Mexico Oil Conservation Division to downhole commingle production from the Angels Peak Gallup and Basin Dakota formations in the subject well. Attached are an eight section plat showing the well to be commingled along with off-setting producing wells and a wellbore diagram showing the proposed commingling technique (see Attachments No. 1 and 2).

If you have any questions regarding the commingling operations, please contact Tim Clawson at our Farmington District Office (325-8841). If you have any objectives to commingled production from the subject well, address them to:

New Mexico Oil Conservation Division
Attn: Mr. Joe Ramey
Box 2088
Santa Fe, NM 87501

If you have objections, please forward a copy of your objectives to this office. No response to this letter will be taken as your approval to the commingling application.

Very truly yours,

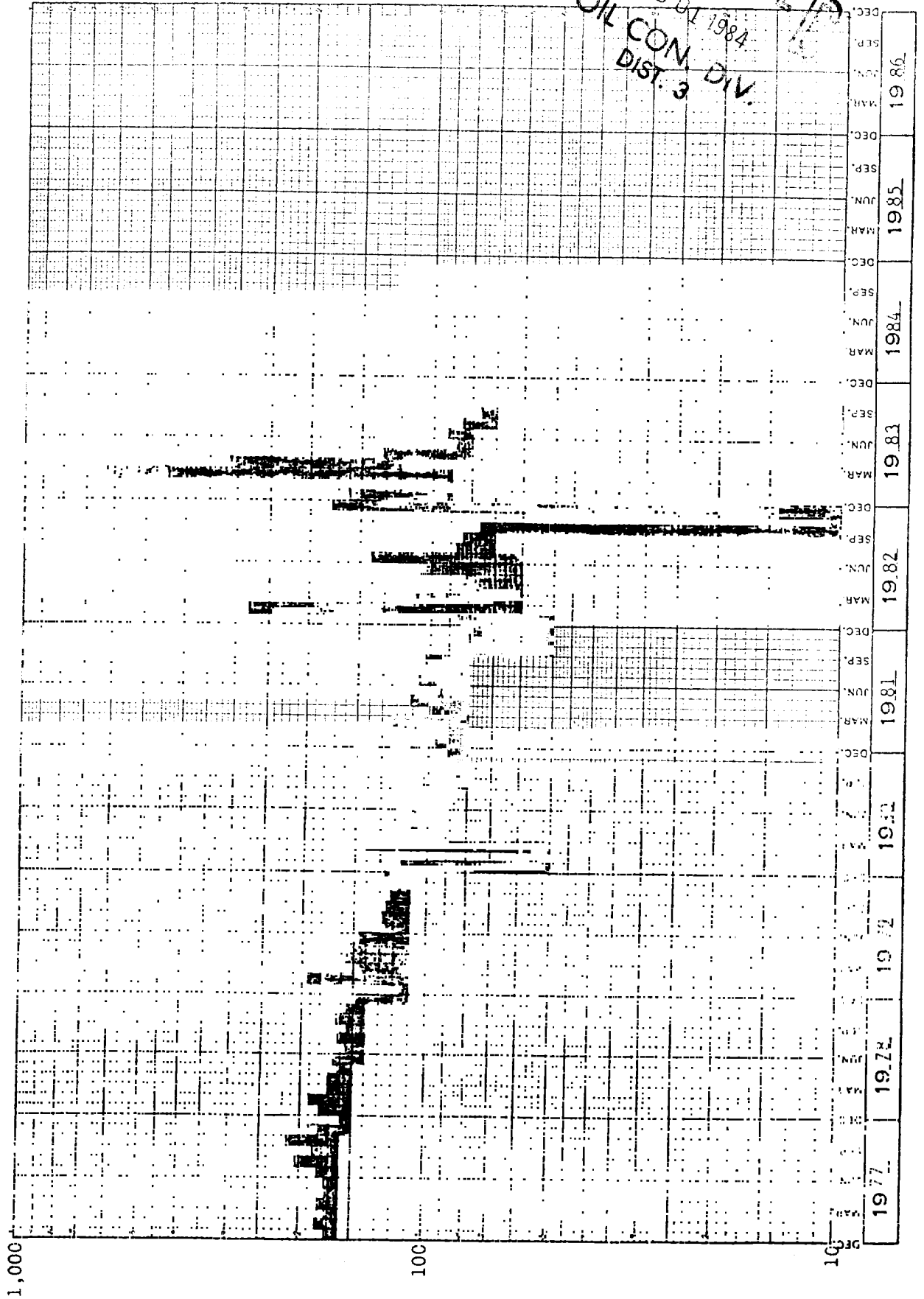
TDC/tk
Attachments

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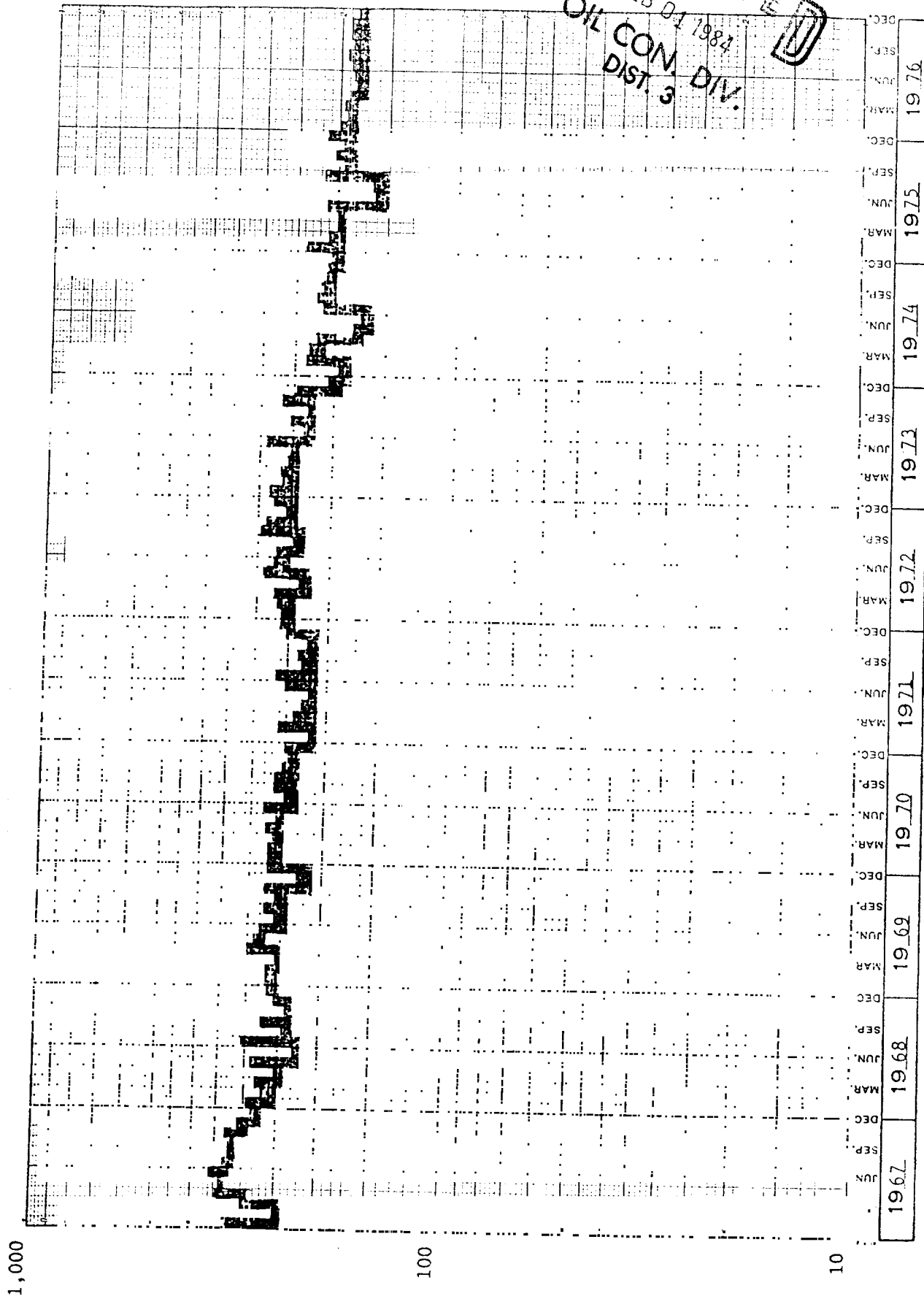
COLEMAN
GRAPH PAPER

Basin Dakota
C. A. McAdams "B" No. 1





Basin Dakota
C. A. McAdams "B" No. 1



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RPT. 1401
PAGE 30

W DELIVERABILITY TEST REPORT FOR 1983
Attachment No. 57

Form 0122-A
Revised 6-77

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DIST. 3

POOL NAME EASTIN	POOL SIZE 1000	COUNTY DANFORTH	73-750
---------------------	-------------------	--------------------	--------

COMPANY AMOCO PRODUCTION CO			WELL NAME AND NUMBER CA MCADAMS B W JK		
ENTERER J	SECTION 28	TOWNSHIP 27	RANGE 10	PURCHASING PIPELINE EL PASO NATURAL GAS CO	
CASING O.D. - INCHES 7.000	CASING I.D. - INCHES 6.456	SET AT DEPTH - FEET 6601	TUBING O.D. - INCHES 2.375	TUBING I.D. - INCHES 1.990	TOP TUBING PERF. - FEET 6357
GAS PAY ZONE FROM 5704 TO 6459		WELL PRODUCING INFO CASING TUBING X		GAS GRAVITY 0.730	GRAVITY X LENGTH 4.41
DATE OF FLOW TEST FROM 05/18/83 TO 05/20/83			DATE SHUT-IN PRESSURE MEASURED 06/02/83		

PRESSURE DATA - ALL PRESSURES IN PSIA

(a) Flowing Casing Pressure (DWI)	(b) Flowing Tubing Pressure (DWI)	(c) Flowing Meter Pressure (DWI)	(d) Flow Chart Static Reading	(e) Meter Error (Item c - Item d)	(f) Friction Loss (a-c) or (b-c)	(g) Average Meter Pressure (Integr.)
0	290	269	284	5	1	286
(h) Corrected Meter Pressure (g+e)	(i) Avg. Wellhead Press. $P_1 = (h+f)$	(j) Shut-in Casing Pressure (DWI)	(k) Shut-in Tubing Pressure (DWI)	(l) P_c = Higher value of (i) or (k)	(m) Del. Pressure $P_d = 50 \times P_c$	(n) Separator or Dehydrator Pr. (DWI) for critical flow only
293	294	0	734	734	367	

FLOW RATE CORRECTION (METER ERROR)

Integrated Volume - MCF/D	Quotient of $\frac{\text{Item c}}{\text{Item d}}$	$\sqrt{\frac{\text{Item c}}{\text{Item d}}}$	Corrected Volume
32	1.0176	1.0088	Q = 33 MCF/D

WORKING PRESSURE CALCULATION

$(1-e^{-3})$	$(F_c Q_m)^2 (1000)$	$R^2 = (1-e^{-3}) (F_c Q_m)^2 (1000)$	P_1^2	$P_w^2 = P_1^2 + R^2$	$P_w = \sqrt{P_w^2}$
.286	600	174	66436	USE PT2	294

DELIVERABILITY CALCULATION

$$Q = C \left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]^n = \frac{83}{\left(\frac{404067}{452320} \right)^n} = \left(\frac{0.8933}{0.9189} \right)^n = 76 \text{ MCF/D}$$

REMARKS:

SUMMARY

Item h 293 Psia
 P_c 734 Psia
 Q 83 MCF/D
 P_w 294 Psia
 P_d 367 Psia
 Q 76 MCF/D
 Company AMOCO PRODUCTION CO
 By D. H. SHREVEAKER
 Title DISTRICT ENGINEER

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JUL 28 1983
OIL CON. DIV.
DIST. 3

06/27/83

10030 73-

